CHAPTER IV – PREVENTING INCREASED DAMAGES

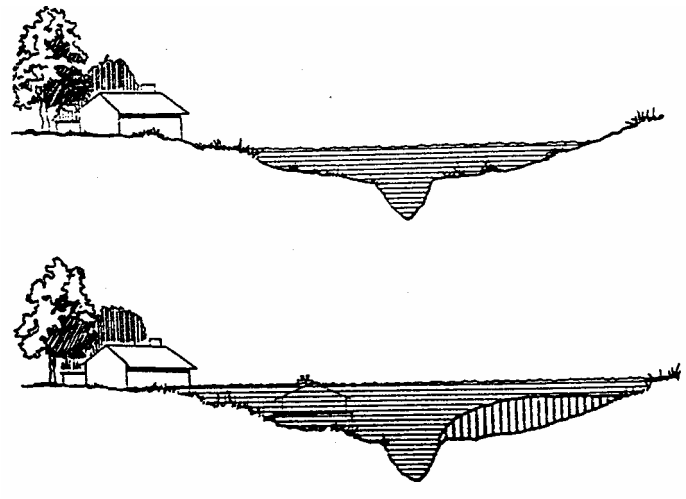
Chapter Summary

Preventing increased flood damage is one of the major objectives of floodplain regulations. Primarily, this means local governments must prohibit any development which obstructs flood flows and increases damage to others. The area that carries the most flood flow is the floodway.

A. The Problem

In the previous chapter, the reason why all development must be regulated was discussed briefly: Many types of projects could block or divert flood waters onto properties that would not otherwise be flooded.

A cross sectional view of a floodplain shows how much area is available for carrying the base flood discharge. When part of the area is taken up or obstructed, the discharge still needs roughly the same amount of area. The result is that the flood must go higher.



One of the key purposes of floodplain regulation is to prevent construction projects similar to those that created problems in the past. This is done by withholding the development permit until the project plans are reviewed to ensure that no obstruction to flood flow or increase in flood damage will be created.

Recall from Chapter III the pebble that could theoretically affect the flow of flood water. Preventing such pebbles would be unfair and absurd. There must be a definition of obstructions to flood flow that would exempt pebbles. The use of floodplains is not prohibited. Rather, the use of floodplains that cause "injury" or "damage" to others is prohibited. This concept is the first objective of the regulations and it guides the flood damage protection standards of Article VI of the Model Ordinance.

Not only does our legal system require regulations to be fair and reasonable, it requires that everyone be treated equitably. If one property owner were allowed to raise flood heights a very small amount, all other owners in a similar situation must also be allowed to raise the flood height by the same amount. Even though the first owner would not cause damage, the cumulative effect of all similar developments would cause damage, thus they all must be prohibited.

A zero increase may not be a desirable standard because a strict legal reading of it would prohibit even the pebble. The NFIP requires that encroachments within the floodway be permitted only when it is demonstrated, by means of an engineering analysis, that the proposed development, when combined with all other existing development and anticipated development, will not increase the water surface elevation of the base flood by more than one foot.

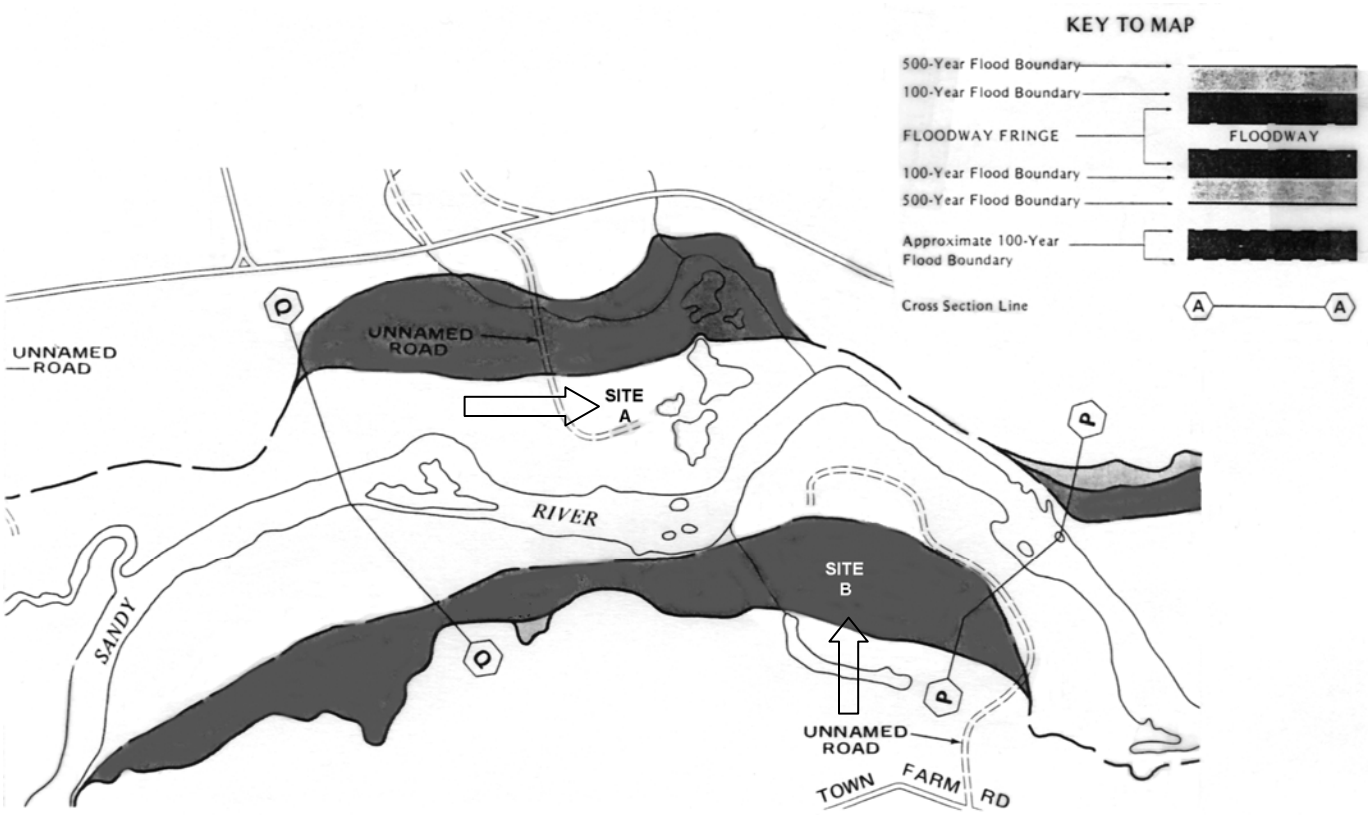
B. The Floodway Concept

Needless to say, trying to review a development permit application to determine the proposed project's effect on flood heights can be difficult and expensive, particularly when future developments must be considered. To reduce this regulatory burden on a community or property owner, the federal government has financed such calculations in those areas where development is most likely to occur. These are called floodway studies and they result in the development of a Flood Boundary and Floodway Map (as described in Chapter II). When a floodway study has not been done, the floodway is assumed to be one half of the width of the SFHA, adjacent to the stream or river.

Development Outside of the Floodway

Once a floodway is delineated, the job of the floodplain regulator is greatly simplified. When a permit application is submitted, the zoning official checks the site location in relation to the floodway boundaries. If the site is in an identified fringe (in other words, outside of the floodway), the official knows the development will not cause flood damage to others: the floodway study already calculated that fringe obstructions will not cause a significant increase in flood heights. (NOTE: this does not mean that the development will not create a localized drainage problem, only that it will not block the flow of waters from flooding of the stream or river that was studied).

Project Site A: in Floodway
Project Site B: in Flood Fringe



Developments in the Floodway

In the floodway, development is not prohibited. However, development that causes an obstruction is prohibited. The regulations assume that fringe owners can and will completely fill or otherwise develop their areas. Therefore, any obstruction in the floodway could cause the base flood to rise above that previously determined permissible amount (e.g. more than one foot). The result would be creation of damages to others - a violation of one of the purposes of the regulations and contrary to Maine law.

In order to be sure an unlawful obstruction does not occur, the community must require that an applicant who wishes to develop in the floodway, obtain an engineering study which demonstrates that the proposed development will not raise the flood elevation, taking into consideration existing and planned development. This requirement is specified in Article VI, Section K.1. of the Model Ordinance. In SFHAs for which no regulatory floodway has been designated on a FBFM, Article VI, Sections K.2. and K.3. apply.

Development Where No Floodway is Mapped

When a community has a riverine SFHA where no floodway has been mapped, the floodway must be assumed to be the area adjacent to the stream or river, which is one half of the width of the SFHA. If a community has a significant potential for development in these types of riverine SFHAs, they should consider asking FEMA to prepare a detailed study which would identify that portion of the riverine SFHA which is considered floodway. The Floodplain Management Coordinator can assist a community in preparing the request for FEMA.

C. Hazardous Materials

Increased flood height is not the only flood related hazard that can be created by floodplain development. Although Article VI of the Model Ordinance does not prohibit the placement of chemicals, explosives, buoyant materials, or other hazardous materials below the flood protection elevation, a community should take steps to assure they are properly floodproofed.

It may be wise to completely prohibit such materials in the SFHA. From the U.S. Corps of Engineers book, *Floodproofing Regulations*, two lists of examples have been developed:

1. Items that are extremely hazardous or vulnerable to flood conditions that should be prohibited from the SFHA:

Acetone	Hydrocyanic (Prussic) Acid
Ammonia	Magnesium
Benzene	Nitric Acid
Calcium Carbide	Oxides of Nitrogen
Carbon Disulfide	Phosphorus
Celluloid	Potassium
Chlorine	Sodium
Hydrochloric Acid	Sulfur

2. Items that are sufficiently hazardous or vulnerable to require their prohibition in all spaces below the base flood elevation or the elevation of flood protection:

Acetylene gas containers
Drugs (in quantity)
Food products (potential health problems)
Gasoline
Charcoal, coal dust (subject to spontaneous combustion when wet)
Matches and sulfur products (in quantity)
Petroleum products
Soaps and detergents (in quantity)
Tires (open storage)
Wood products (in quantity)

Other hazards to be cautious of are storage tanks, lumber, and similar buoyant materials. If not properly anchored, these items can become floating debris that will abut buildings or bridge openings downstream causing blockage of flood flows and increased flood heights.

Pollution

Article VI, Section C of the Model Ordinance is designed to prevent both water pollution and flooding of sewer lines (which usually results in flooded basements) and subsurface wastewater disposal systems. Manholes can be watertight or elevated above the flood protection elevation. Although there is no way to make a septic system leach field watertight, septic tanks can be made substantially watertight or elevated so the inlet and outlet are above the flood level.

Manufactured Housing

Manufactured housing is susceptible to being washed off of foundations, carried downstream and causing significant damage to other properties. Article VI, Section H of the Model Ordinance requires manufactured housing units to be elevated on a permanent foundation, at least one foot above the BFE. **Whereas permanent foundations cannot be placed within a floodway without causing an increase in the flood elevation, manufactured housing is not allowed in floodways.** This is a requirement of the NFIP. The NFIP does not apply this regulation to the placement of mobile homes in **existing** mobile home parks (those that were there before a community joined the NFIP). However, the Model Ordinance does, and the State Planning Office recommends communities retain that provision in their ordinances. Also see FEMA publication 85 - *Manufactured Home Installation in Flood Hazard Areas.*